

Claims

1. A toothbrush head of an electric toothbrush, which comprises a hand-piece equipped with a drive, a brush head carrier (11) that is connectible to the hand-piece, and several bristle supports (10, 13) that carry a respective bristle set (9, 8), are movably mounted on the brush head carrier (11) and drivable in an oscillatory manner by the drive, said bristle supports (10, 13) being adapted to be coupled to a translator element (14) of the drive by means of a drive coupling (18, 50, 51; 21), characterized in that the bristle supports (10, 13) each have drive coupling means (18, 51; 21) enabling them to be coupled to one or more eccentric drivers (50) of the drive translator element (14) which is adapted to be driven for rotation about a longitudinal axis (60).

2. The toothbrush head according to the preceding claim wherein the drive coupling means (18, 50, 51; 21) of the bristle supports (10, 13) are constructed such as to be adapted to be coupled to a common driver pin (51), which describes a cylindrical or conical orbit relative to the rotation axis of the translator element.

3. The toothbrush head according to claim 1 wherein the drive coupling means (18, 50, 51; 21) of the bristle supports (10, 13) are constructed such as to be adapted to be coupled to a common driver pin (51), which is adapted to be driven to oscillate on a partial orbit in the shape of a cylinder segment or a cone segment relative to the axis of rotation of the translator element.

4. The toothbrush head according to any one of the preceding claims wherein the translator element (14) is mounted on the brush head carrier (11) for rotation about its own longitudinal axis in the interior of the brush head carrier and has on its end close to the handpiece a coupling section (1) for the non-rotatable coupling to a drive element at the handpiece end.

5. The toothbrush head according to any one of the preceding claims wherein each of the bristle supports (10,13) has its own axis of motion (12; 19, 25, 29, 30, 31) transverse to the toothbrush longitudinal direction.

6. The toothbrush head according to any one of the preceding claims wherein one main bristle support (10), in particular at the end of the brush head carrier (11) remote from the handpiece, is mounted for rotation about an axis of rotation (12) essentially perpendicular to the longitudinal direction of the toothbrush and/or essentially parallel to a main bristle direction of the bristle set (9) provided on the main bristle support, and is adapted to be driven in oscillatory manner.

7. The toothbrush head according to any one of the preceding claims wherein an auxiliary bristle support (13), in particular a bristle support nearest to the handpiece, is pivotally mounted about a pivot axis (19, 25, 29) arranged essentially perpendicular to the longitudinal direction of the toothbrush, and is adapted to be driven in oscillatory manner.

8. The toothbrush head according to the preceding claim wherein the pivot axis (19) of the auxiliary bristle support (13) is arranged approximately parallel to the main bristle direction of the auxiliary bristle set (8) disposed on the auxiliary bristle support (13) and/or approximately perpendicular to the plane defined by the auxiliary bristle support (13).

9. The toothbrush head according to claim 7 wherein the pivot axis (25, 29) of the auxiliary bristle support (13) is arranged essentially parallel to a plane defined by the auxiliary bristle support (13).

10. The toothbrush head according to any one of the preceding claims wherein an auxiliary bristle support (13), in particular a bristle support nearest to the handpiece, is mounted for translational displacement along a motion axis (30, 31), in particular transverse to the toothbrush longitudinal direction.

11. The toothbrush head according to the preceding claim wherein the motion axis (30) is arranged approximately parallel to the main bristle direction of the auxiliary bristle set (8) disposed on the auxiliary bristle support (13) and/or approximately perpendicular to the plane defined by the auxiliary bristle support.

12. The toothbrush head according to claim 10 wherein the motion axis (31) is arranged transverse to the longitudinal direction of the toothbrush and approximately parallel to the plane defined by the auxiliary bristle support (13).

13. The toothbrush head according to any one of the preceding claims wherein the auxiliary bristle support (13) has as drive coupling (21) a flexible coupling which is flexible about a joint axis transverse to the longitudinal direction of the toothbrush.

14. The toothbrush head according to any one of the preceding claims wherein the drive coupling between the auxiliary bristle support (13) and the driver (50) of the translator element (14) has a translational degree of freedom, allowing in particular a translational mobility in a direction transverse to the axis of rotation of the translator element, with the driver (50) being guided in a longitudinally slotted clearance space (22) in the auxiliary bristle support (13).

15. The toothbrush head according to any one of the preceding claims wherein the auxiliary bristle support (13) has as drive coupling (21) a sliding surface (27) that extends transverse to the longitudinal direction of the toothbrush and on which the driver (50) is adapted to slide, with provision being made for a biasing device which holds the sliding surface (27) in engagement with the driver (50).

16. The toothbrush head according to any one of the preceding claims wherein the drive coupling means (21) of at least one of the bristle supports () are constructed such that forces and movements are transmitted exclusively in a direction transverse to the longitudinal direction of the toothbrush, with the drive couplings (18, 51; 21) being free-moving in a plane containing the longitudinal direction and being force-transmitting in a plane perpendicular thereto.

17. The toothbrush head according to any one of the preceding claims wherein the drive coupling means (18, 51) of at least one of the bristle supports (10) are constructed such that forces and movements are transmitted in a direction transverse to the longitudinal direction of the toothbrush and forces are transmitted in the longitudinal

direction of the toothbrush, with the corresponding driver (50) being mounted on the translator element (14) for displacement in the longitudinal direction of the toothbrush, being elastically biased.

18. The toothbrush head according to any one of the preceding claims wherein the drive couplings (18; 23, 24) are provided directly and/or rigidly on the bristle supports (10, 13) and are directly in positive engagement with the respective driver (50) fastened to the translator element (14) without the interposition of any parts like connecting rods and the like.

19. The toothbrush head according to any one of the preceding claims wherein the translator element has an eccentric bearing bore, is constructed as a plastic injection molding, and the driver (50) is formed by pin, in particular a metal pin (50), which is mounted in the bearing bore for longitudinal displacement and for rotation about its longitudinal axis.

20. The toothbrush head according to any one of the preceding claims wherein provision is made for biasing means (52), in particular a spring device (52), for biasing the translator element or the driver (50) secured thereto against at least one of the bristle supports (10).

21. The toothbrush head according to any one of the preceding claims wherein it includes disengageable fastening means (61) for its attachment to the handpiece, and the brush head carrier (11), together with the bristle supports (10, 13), is detachable from and attachable to the handpiece, with the translator element (14) comprising a disengageable rotary coupling (1) which, when the toothbrush head is plugged onto the handpiece, threads itself upon or makes engagement with a drive element at the handpiece end.

22. The toothbrush head according to any one of the preceding claims wherein at least one of the bristle supports (10, 13) carries bristle tufts tilted in varying orientations, of varying cross sections, of varying lengths and/or of varying levels of

rigidity, with each bristle support (10, 13) having bristle tufts tilted at varying angles, and bristle tufts which are tilted at varying angles being of varying cross sections.

23. A toothbrush with a toothbrush head according to any one of the preceding claims.